POLYMER DISPERSED LIQUID CRYSTAL FORMULATIONS FOR MODULATOR FABRICATION

ABSTRACT OF THE DISCLOSURE

Embodiments of polymer dispersed liquid crystals (PDLCs) in accordance with the present invention comprise TL-series liquid crystal materials and a polymer matrix comprising polyacrylate resins having hydroxyl groups. These hydroxyl groups allow crosslinking by using isocyanate, improving mechanical properties and heat resistance. Typical ratios of liquid crystal to polymer range between about 50/50 to 70/30 (wt/wt). The PDLC materials exhibit enhanced sensitivity to driving voltages and higher transmission ~voltage (T-V) curve slope. In testing thin film transistors (TFTs), these PDLC materials can be used to compensate for an increased air gap accommodating flatness variation in the TFT substrate, and to reduce electrostatic forces between modulator and panel. Embodiments of PDLC materials in accordance with the present invention form solid films upon evaporation of the solvent. Homogeneity of embodiments of solvent-based PDLC formulations in accordance with the present invention allow for the use of many different coating methods, such as spin, doctor blade, and slot-die coatings.